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APPLICATION SERIAL NO. 10/816,398

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REMARKS

In the Office action dated July 26, 2006, claims 41-48 were rejected. Applicants thank the examiner for favorable consideration and allowance of claims 1-40 and 49-52. Claim 41 is amended. No new matter is added. Further examination and reconsideration respectfully are requested.

Claim Rejections – 35 U.S.C. §102

On page 2 of the Office Action, claim 41 is rejected under 35 U.S.C. §102(b) as being anticipated by U.S. Patent No. 6,741,408 ("Beattie").

To anticipate a claim, the reference must teach every element of the claim. "A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." *Verdegaal Bros. v. Union Oil Co. of California*, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). "The identical invention must be shown in as complete detail as is contained in the ... claim." *Richardson v. Suzuki Motor Co.*, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989). Therefore, all claim elements, and their limitations, must be found in the prior art reference to maintain a rejection based on 35 U.S.C. §102. Applicants respectfully submit that Beattie does not teach every element of claim 41 and therefore fails to anticipate claim 41. Applicants believe current claim 41 is in condition for allowance. Reconsideration, allowance, and notice to that effect are respectfully requested.

Beattie discloses using a bonding technique to rigidly mount a diffraction grating to a frame. (column 4, lines 27-32) In order to prevent separation of the frame from the grating, Beattie discloses matching the coefficient of thermal expansion (CTE) of the frame to that of the grating. (column 4, lines 34-38)

For a grating made from fused silica, Beattie discloses using a frame made from invar: "Invar is a stainless type of metal that has a very low CTE, which is virtually identical to the CTE of the substrate 140 (e.g., fused silica) of the diffraction grating 110.

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One type of invar, "invar 36", is preferred. However any material having a CTE between about 1.0 and about 1.2 PPM/C may be utilized for the frame 115." (column 4, lines 39-45) Beattie discloses no other materials for the frame.

In other words, Beattie overcomes thermal expansion issues by placing restrictions on the frame material, namely that its thermal expansion coefficient be close to that of the grating. Applicants assert that Beattie only discloses frames made of materials that have a thermal expansion coefficient that is "substantially dynamically thermally matched" to that of the grating. (column 4, lines 35-36; emphasis added)

Beattie fails to disclose or teach a "frame having a thermal expansion coefficient substantially different from that of the diffraction grating", as recited by amended claim 41,

Because not all the elements of amended claim 41 are disclosed by Beattie, amended claim 41 is not anticipated by Beattie. Applicants believe amended claim 41 is in condition for allowance. Reconsideration, allowance, and notice to that effect are respectfully requested.

Claim Rejections – 35 U.S.C. §103

On page 2 of the Office Action, claims 42-48 are rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 6,741,408 ("Beattie").

Three criteria must be met to establish a *prima facie* case of obviousness. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference. Second, there must be a reasonable expectation of success. Finally, the prior art reference, or combination of references, must teach or suggest all the claim limitations. MPEP § 2142. Applicants respectfully traverse the rejection since the prior art fails to disclose all the claim limitations and there would be no motivation to combine

the references as proposed by the examiner. Applicants believe current claims 42-48 are in condition for allowance. Reconsideration, allowance, and notice to that effect are respectfully requested.

As discussed above, Beattie discloses using a bonding technique to rigidly hold a diffraction grating to a frame, where the frame has a thermal expansion coefficient that "is substantially dynamically thermally matched" to that of the grating. (column 4, lines 28-38) As noted in the present application, if the thermal expansion coefficient of the frame is matched to that of the grating, "then problems associated with the relative thermal expansion between the grating and the frame are reduced." (present application, page 13, lines 5-6)

In other words, Beattie addresses the problems caused by relative thermal expansions by placing restrictions on the frame material. Beattie fails to teach or suggest using a frame made of material with a thermal expansion coefficient that is substantially different from that of the grating.

In contrast, the present application is directed toward using a frame that has a thermal expansion coefficient that is substantially different from that of the grating: "It is difficult and/or expensive, however, to manufacture the frame from fused silica or another low thermal expansion material, such as INVAR. It is often more convenient, and less expensive, to manufacture the frame from a metal, such as titanium, stainless steel or aluminum. These metals, however, have a thermal expansion coefficient that is many times higher than fused silica." (present application, page 13, lines 6-11; emphasis added)

The present application provides values of the thermal expansion coefficients for these materials (page 12, line 30; page 13, lines 12-14): where the grating substrate is fused silica (thermal expansion coefficient of $0.55 \times 10^{-6} \text{ K}^{-1}$), the frames may be made from materials that include, but are not limited to, titanium ($9 \times 10^{-6} \text{ K}^{-1}$), stainless steel ($16 \times 10^{-6} \text{ K}^{-1}$) and aluminum ($25 \times 10^{-6} \text{ K}^{-1}$). Other suitable materials include Kovar ($5 \times$

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10^{-6} K^{-1}). Each of these frame materials has a thermal expansion coefficient that is substantially different from that of the substrate, that is, well outside the range of values that are "substantially dynamically thermally matched" to that of the grating, as disclosed by Beattie.

Amended claim 41 includes the limitation that the frame have "a thermal expansion coefficient substantially different from that of the diffraction grating". (emphasis added) Applicants assert that Beattie clearly teaches away from this limitation by requiring that the thermal expansion coefficient of the frame be "substantially dynamically matched" to that of the grating. (column 4, lines 35-36; emphasis added)

Because not all the limitations of amended base claim 41 are taught or suggested by Beattie, amended claim 41 is not unpatentable over Beattie.

Dependent claims 42-48, which are dependent from independent claim 41, were rejected under 35 U.S.C. §103(a) as being unpatentable over Beattie. While Applicants do not agree with the particular rejections to these dependent claims, it is believed that these rejections are moot in view of the remarks made in connection with independent claim 41. These dependent claims include all of the limitations of the base claim and any intervening claims, and recite additional features which further distinguish these claims from the cited references. Therefore, dependent claims 42-48 are also in condition for allowance. Reconsideration, allowance, and notice to that effect are respectfully requested.

Conclusion

In view of the foregoing amendments, it is believed that the application is now in condition for allowance. Applicants respectfully request favorable reconsideration and the timely issuance of a Notice of Allowance. If a telephone conference would be

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helpful in resolving any issues concerning this communication, please contact the undersigned at (952) 253-4114.

Respectfully submitted,

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Date: October 16, 2006

By:


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